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SOME PROBLEMS OF THE AMERICAN RACE¹

By W. H. HOLMES

THE state of culture progress known as civilization had been reached in parts of the Old World thousands of years before the existence of the continent now called America was suspected. Enterprising navigators had long been searching the seas, in the best craft of their time, for distant lands and especially for new pathways to the far east, but with meagre success until Columbus, in 1492, sailing under the flag of Spain, happened to sight the shores of the western world. That a vast continent should have remained thus hidden away below the horizon of dwellers on the proximate shores of Europe on the east and Asia on the west is a marvel indeed, a marvel paralleled only by the fact that men had already reached this land and that it was occupied by ten million people of a type wholly unknown to the wise men of the east.

In the four hundred years of exploration and research which have followed the Columbian discovery no one has been able satisfactorily to answer the oft-repeated questions of the *how*, the *when*, the *whence*, and the *who* of the aboriginal inhabitants. Although we cannot hope to answer these interrogations fully, they are living questions, and refuse to be set aside or lightly passed over. The early stages of the investigation have given rise to much vain speculation, and much has been written advocating views that later have become untenable and are now on the high road to oblivion. Today the field of research is well cleared, and the problems are be-

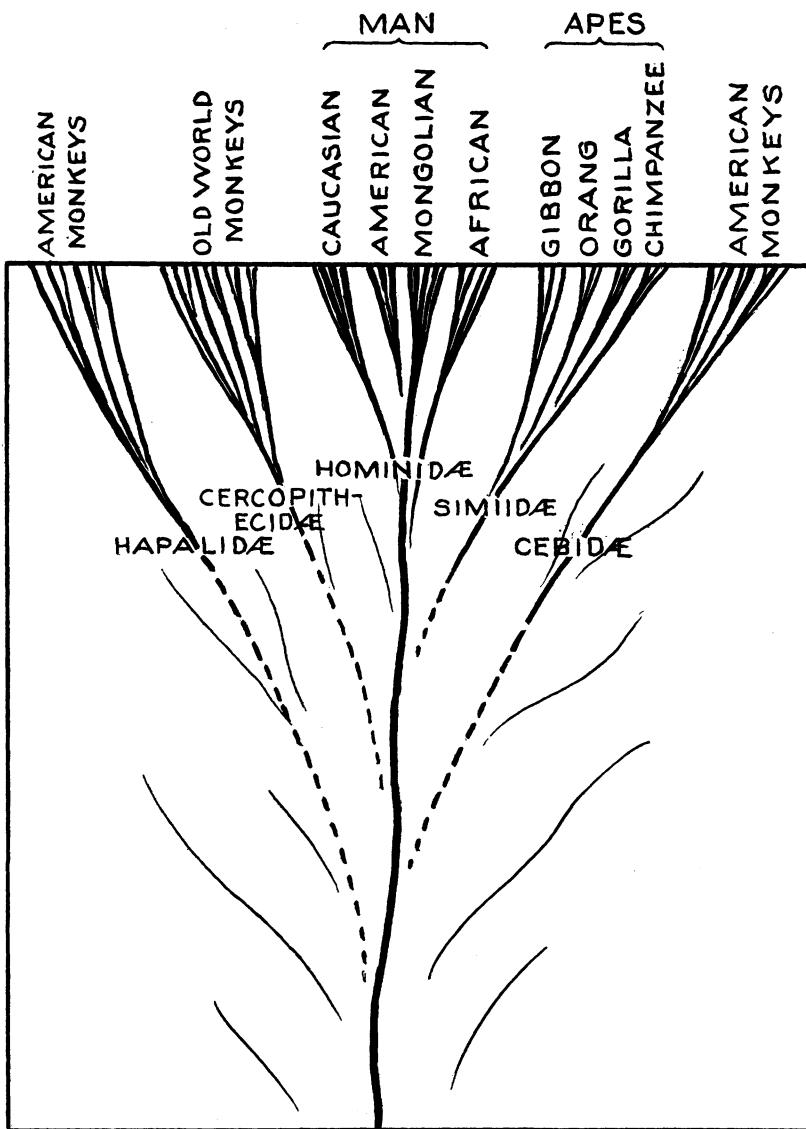
¹ Read in part before the American Anthropological Association, Boston, December 28, 1909.

ing presented and discussed in the broad and searching light of modern science. Comparative anthropology aided by a galaxy of allied sciences is scanning the problems from modern points of view, and our expectations of still stronger light are aroused by recent achievements of the rapidly developing and noble science of geology, which, word by word, page by page, is laying bare the marvelous records of the rocky strata of the earth's crust in which the secrets of the past lie hidden. To this science we must look for a more complete knowledge of the habitable areas of the globe and their relationships one with another throughout all periods, and above all it is geological research that must furnish the missing links, osteological and cultural, and the chronology of events that shall enable us to formulate, in outline at least, a connected history of the human family.

BIOLOGICAL PROBLEMS

In approaching the history of the American race the first problems to present themselves are biological. We can consider neither the people of America nor the peopling of America without dealing first with the history of the human family, its derivation from antecedent forms, the maturing of the species *sapiens*, the original habitat and dispersal to the various land areas of the globe. These problems are yet largely in the speculative stage, but facts enough have accumulated to aid us in formulating working hypotheses and to make it possible to lay out and conduct intelligent researches.

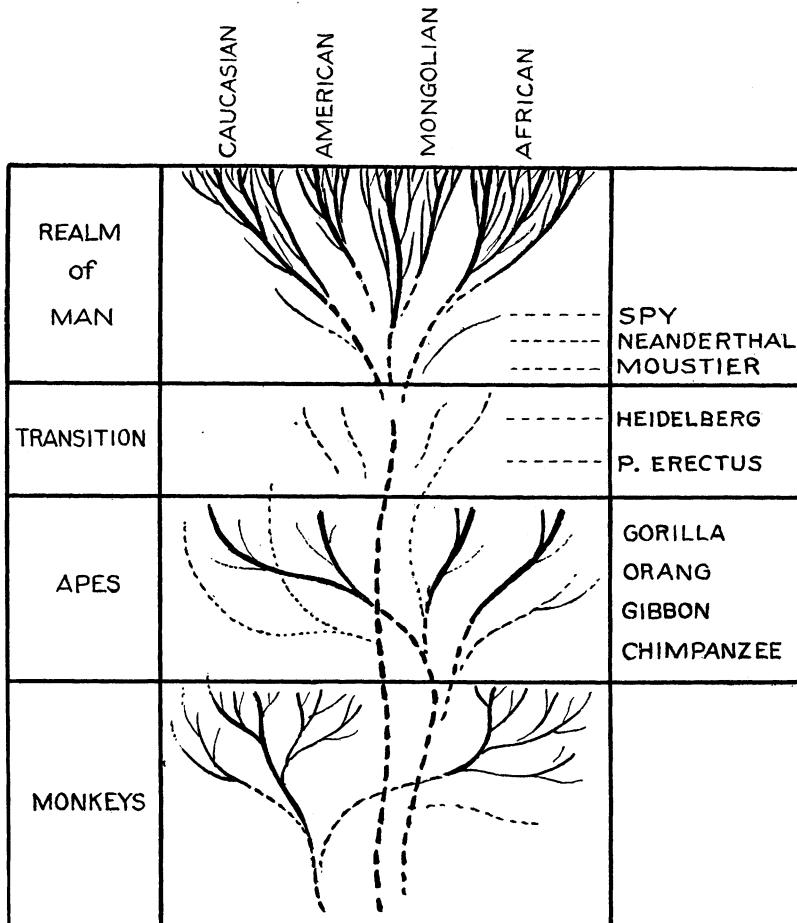
Formerly it was very generally held that man stands alone as a separate unit of creation, distinct in every respect from other creatures, and there may yet be diversity of opinion on this point; but science has opened the way to a general acceptance of the conclusion that all living forms are parts of one system, that all the higher organisms alike had their beginnings in more elementary forms, and that, whatsoever the forms previously assumed, they have come to be what they are through a long series of specializing transformations. The culminating member of the wonderful series of progressive steps is the family *Hominidae*. The various specializing agencies concerned in the evolution of the numerous more or less well-defined species and varieties of man are the subject of earnest research, but their analysis is beyond the requirements of this



I. — The human groups and their kindred of today.

sketch, the main purpose of which is to summarize briefly the relations, biologic, chronologic, and geographic, of the American race

with the principal Old World groups — the Mongolian, the Caucasian, and the Ethiopian.¹ The genetic relationships of these groups with their immediately inferior kindred — the Simians — of the present day are indicated in Diagram I.

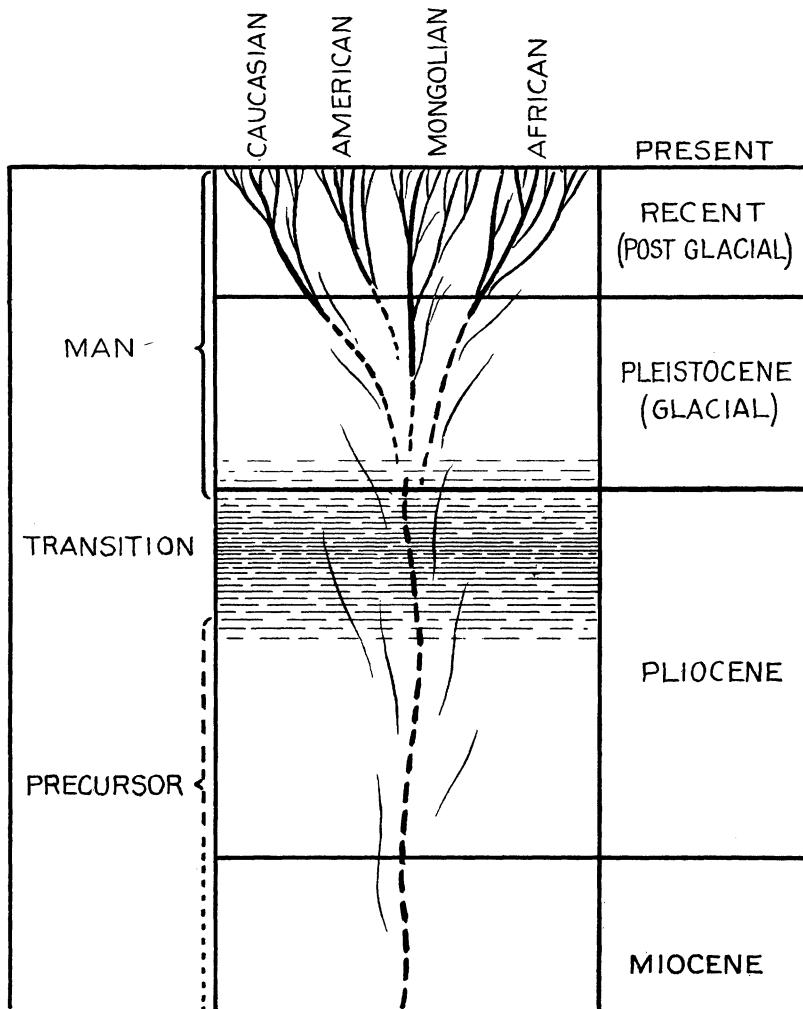


II. — Developmental relationships of men, apes, and monkeys.

Diagram II expresses roughly our conception of the general developmental position of the four members of the human family

¹ The term *race* is employed loosely in speaking of any of the somatic groups, as the simian race, the human race, the American race. The term *variety* is employed in like manner for various secondary and minor subdivisions.

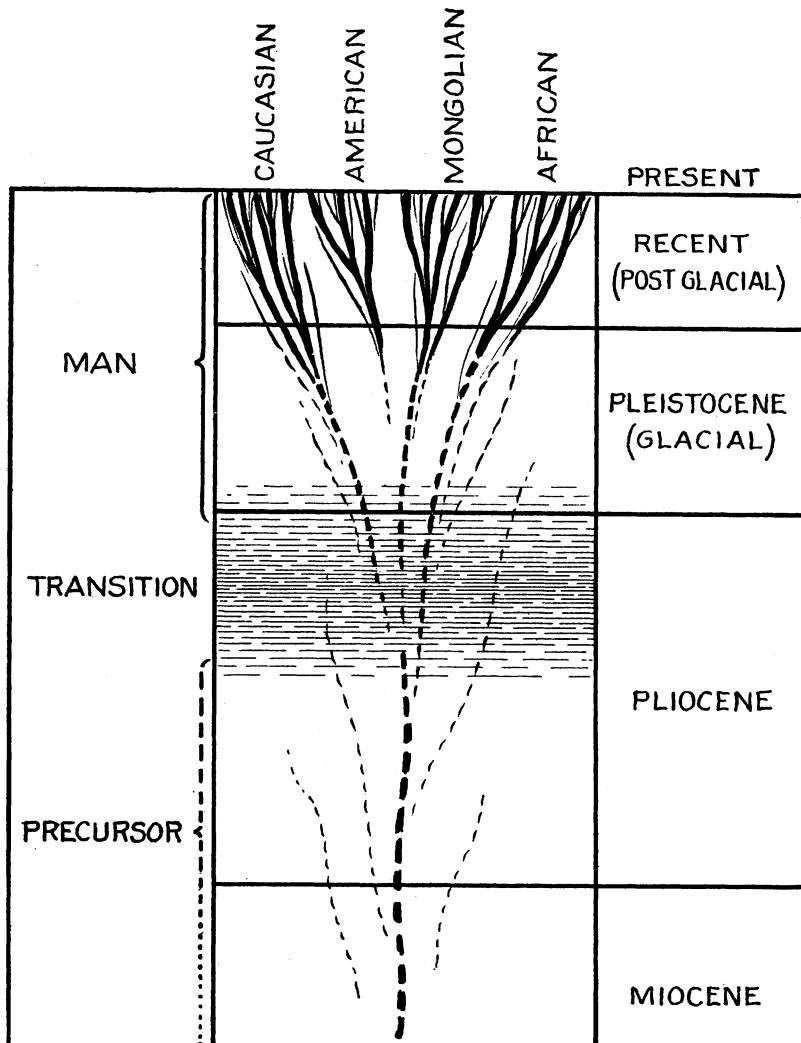
with relation to the lower allied forms whose genetic position is indicated in Diagram I. The upper zone is the realm of man; the second, the realm of the apes; the third, the realm of the monkeys. In the



III. — Parting of the groups after the human status had been reached.

superior zone are the *Hominidæ*, represented by four sub-divisions — the Caucasian, the American, the Mongolian, and the African — and an indefinite number of varieties, the genetic stem connecting down-

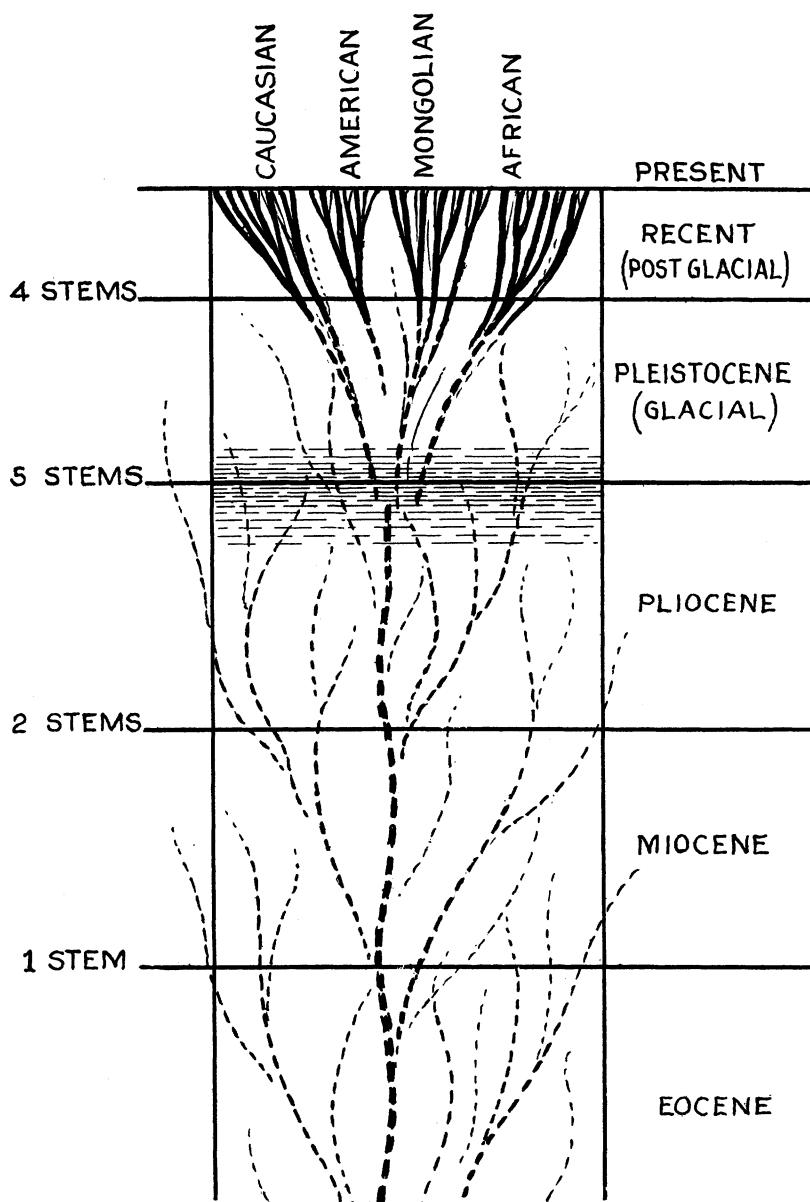
ward through the successive stages of development to hypothetical beginnings. The connections, or lack of connections, of this stem with the stems of the various groups of apes and monkeys are neces-



IV. — Parting of the groups before the human status had been reached.

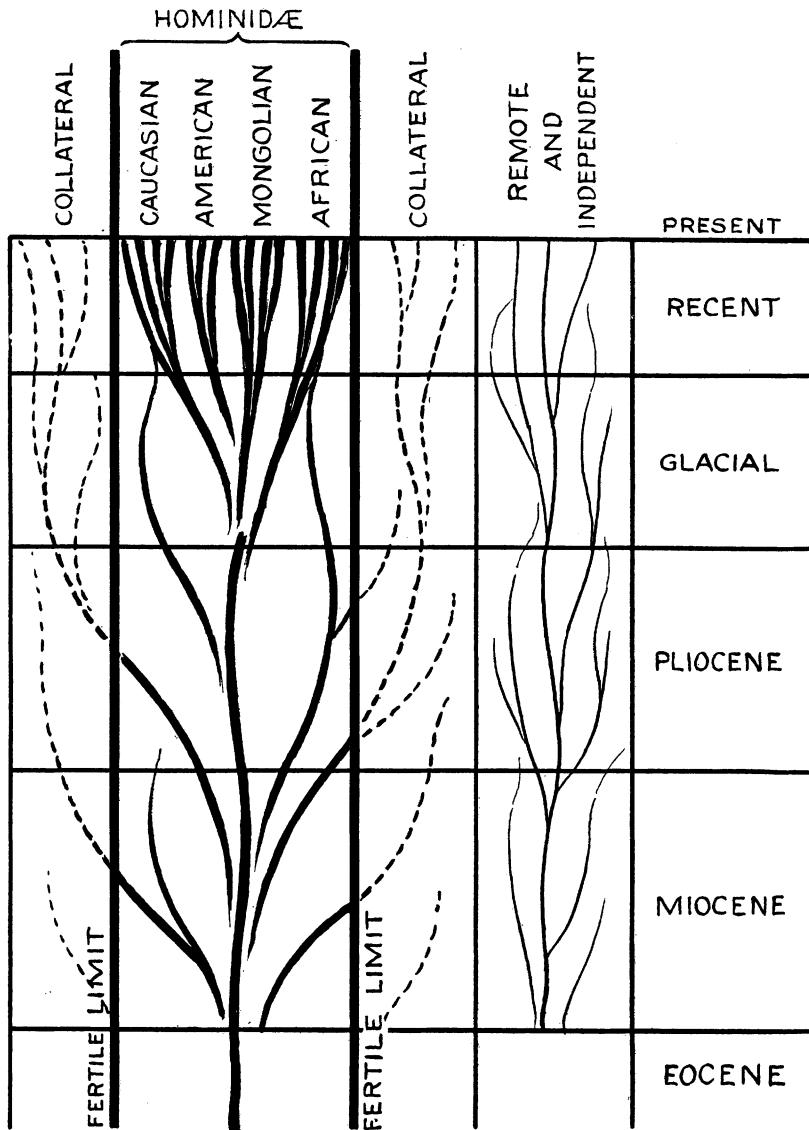
sarily indefinite, but the morphologic relationships with these groups are such that we can not avoid the conclusion that each has separated in turn from a common, generalized ancestral stem.

Discussion has raged around the question of the specific unity of man. It is not even known whether the ways of the several existing sub-species parted after the human status had been reached by the group as a whole (Diagram III) or whether separation and differentiation took place at an earlier stage, two or more groups of the *Hominidæ* thus rising independently to the status of man (Diagram IV) and finally occupying their present relative positions in the scale of development. Some hold that the separation was early. It is maintained, for example, that the African, or black, sub-species stands far apart from the other branches, presenting so many points of decided dissimilarity as to be classed as a separate species. This would affect the form but would not alter the character of the genetic tree (see Diagrams III and IV). The limitations of species are necessarily indefinite and it is quite sufficient for our purpose to have it agreed that the several races of men are derived by differentiation from a common stock, howsoever that stock may have been constituted, and that the differences are due, at least in large part, to dispersal to several more or less completely isolated land areas. It appears that the question of the unity of the races or the lack of it may be one of definition only, the answer depending on the view we choose to take as to what constitutes the human status. Our conception of the race tree as indicated in the diagrams may, however, be wide of the mark. The assumption embodied in these diagrams is that the biological history of the human ancestral group has been very simple. It is implied that the whole of the mutually fertile population was confined to a single area where free intermingling was possible, but this assumption may need more careful examination. It is well understood that if, at any period in the history of families of creatures, certain groups should become separated in different regions, or continents, so that free intercourse between the groups would be interfered with, there would arise, or tend to arise, varieties and species according to the degree of variation. It is equally clear that if by changes of geographic relations all such groups, not differentiated beyond the mutually fertile limit, should be thrown together indiscriminately, unless kept intact by selective antagonisms they would tend to return to the simple condition of a uniform stock. This coming together may have happened to any



V.— Possible complexity of the ancestral stem of the human family.

two, three, or more of the groups, in case so many existed; and as the result of successive geographic changes such as the world may well have undergone, the process of separating and uniting may have



VI.—Significance of the "mutually fertile limit."

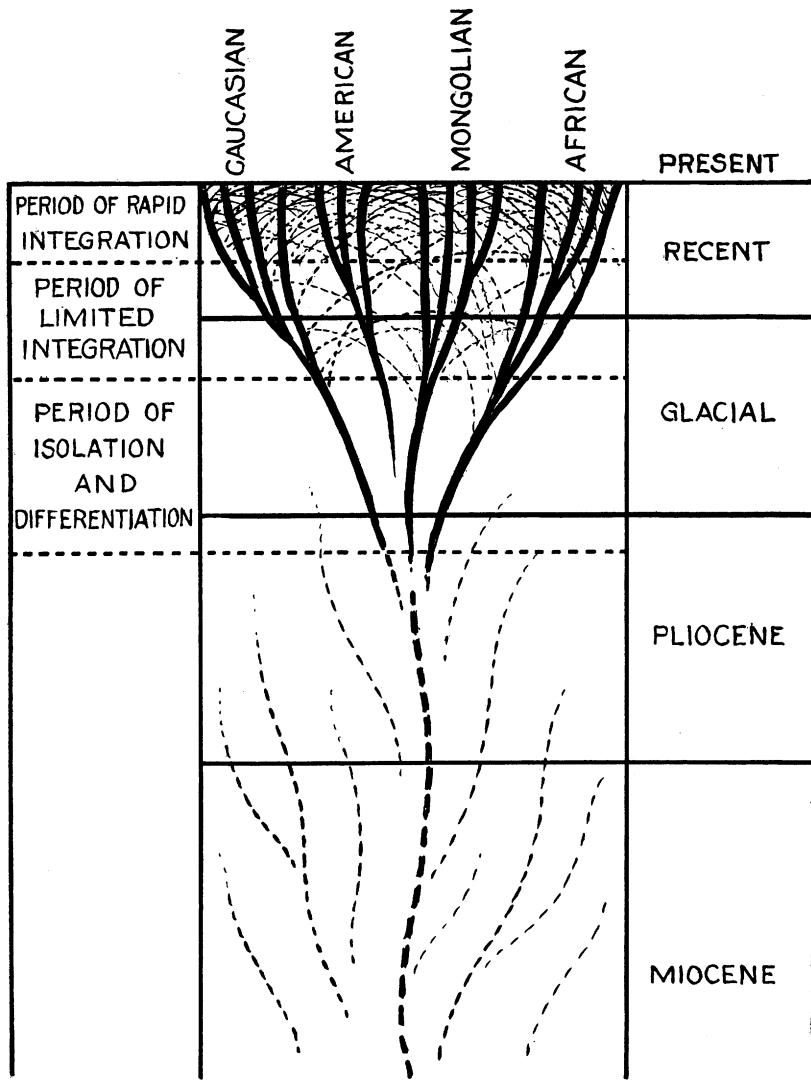
continued indefinitely. Who shall say then what was the precise condition of the ancestral human stem at any period in the past? The black race for example may be, as the diagram assumes, the result of a branching and subsequent isolated growth, but may it not be the result of the merging of two or more widely variant lines brought together through environmental changes? In like manner may not the Mongolian be the resultant of other mergings and the Caucasian of others still? May not the conditions of the ancestral stem then be something as seen in Diagram V, where we have illustrations of strict monogenesis on the one hand or polygenesis on the other, according to the place in the history of the family at which we draw our datum line. There may never have been a time when there was a single homogeneous race stem and hence never ideal monogenesis. If we regard all the groups of related beings within mutually fertile limits as the stem, there has never been any condition other than that of monogenesis, and that, I take it, is the true view. That at any time in the past, even at the so-called cradle period, there could have been a single homogeneous group cannot be proved and need not be assumed. That at any time in the past the ancestral stock should have been reduced to a single pair is beyond the pale of belief.

The significance of the expression "mutually fertile limits" is indicated in Diagram VI.

Unless some of the groups already outside of the mutually fertile limits by an extraordinary reversion should return within the fertile limit there could be no polygenesis. Should any one venture to assert that such a return had come under observation we should be tempted to perpetrate a hibernicism by affirming that the coming in afforded excellent proof that there had never been a going out.

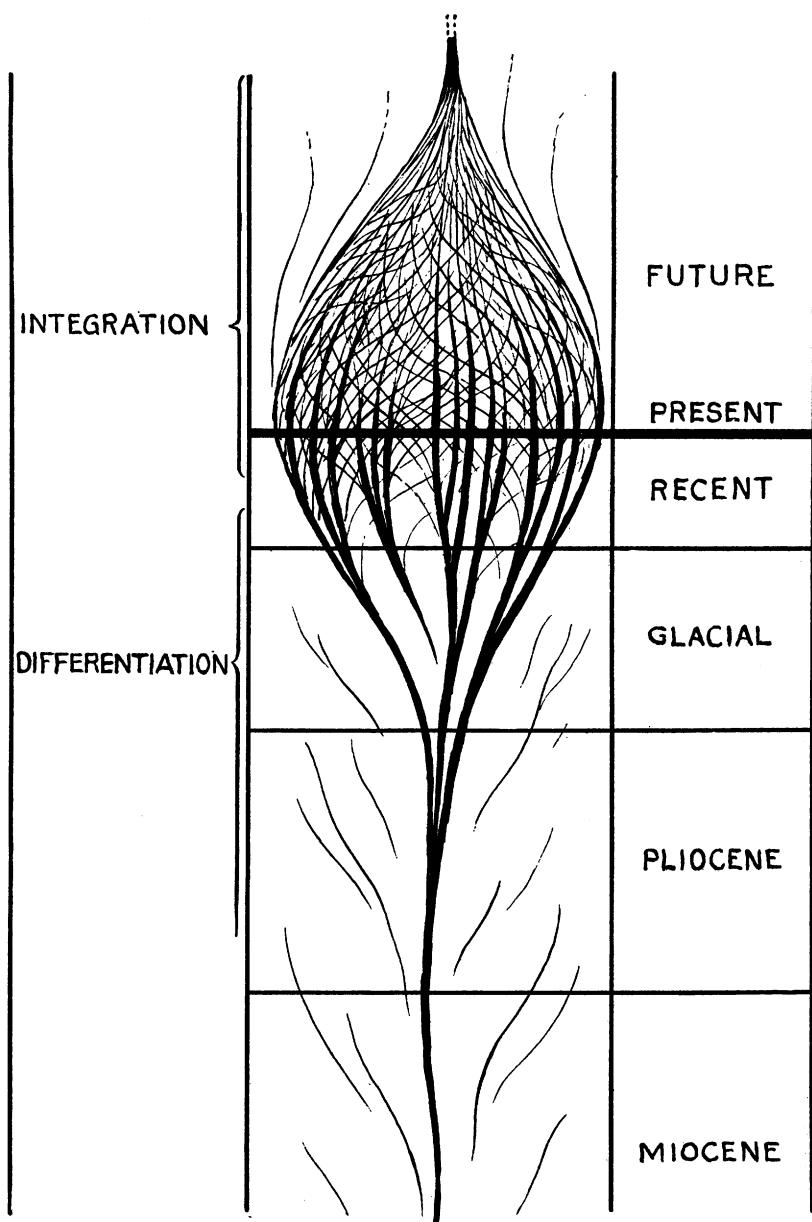
We may derive a valuable lesson in race mutation from what is taking place in the world today literally before our eyes. We observe the groups produced by isolation on separate land areas now freely intermingling. The geographic barriers have been broken down by modern advances in transportation facilities and the racial comminglings that formerly went on only along lines of contact of the racial groups, resulting in limited mixture of bloods, are now taking place on a grand scale. The progressive character of these

conditions is indicated in Diagram VII ; this is especially pronounced between the black and red races¹ in the United States, between the white and red in Mexico, among all three in middle and South



VII. — Periods of differentiation and integration.

¹ It is convenient sometimes to use the color terms for the four sub-races, although it is understood that the red race is never red, the white never white, the yellow never yellow, and the black often not black.

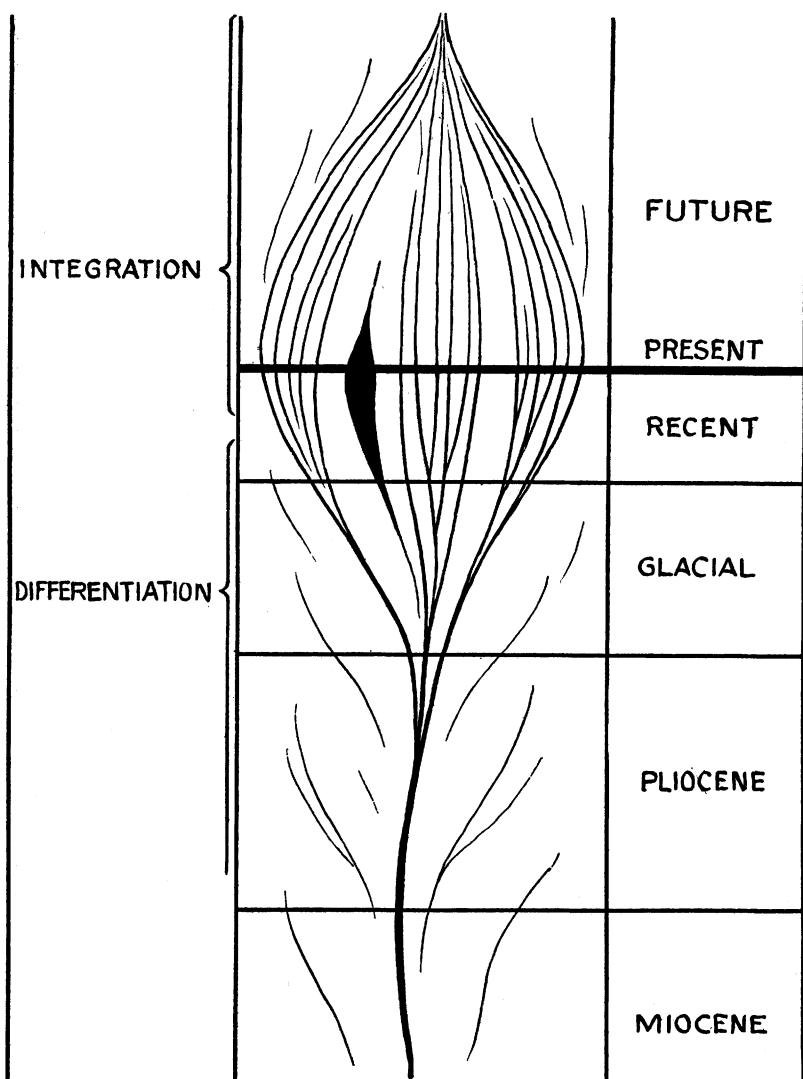


VIII. — Past differentiation and assumed future integration of the somatic groups.

America, and among the yellow, white, and black races in various parts of the Old World. The barriers of land and sea are almost wholly broken down and the only remaining barrier of the races is race prejudice, which attitude will retard the progress of integration but not prevent its final triumph. The fate of the races is manifestly in the balance. Although somewhat similar conditions must have existed at various times in past ages, it is not probable that race comminglings on an equal scale have ever taken place within the line of human descent, but that like blendings have often occurred can hardly be doubted.

Stepping over the line of the present, and venturing a hasty glance into the future, we may forecast successive somatic changes as indicated in Diagram VIII. The progress of integration and blending of the racial elements will be rapidly accelerated. The complete absorption or blotting out of the red race will be quickly accomplished, and beyond this, though still far away, we foresee a final reduction of all peoples to a common race type. If peaceful amalgamation fails, extinction of the weaker by less gentle means will do the work. No other result can be anticipated unless the wonder-working agencies of transportation should make possible migration to other worlds than ours. The final battle of the races for possession of the world is already on.

The life history of the American race, as outlined above and as indicated more clearly in Diagram IX, is simple indeed. We infer from abundant evidence a slow development of the race in the past, beginning with the earliest occupation of the continent and continuing up to the Columbian period. Our people have been witnesses of a few hundred years of vain struggle ending with the pathetic present, and we are now able to foretell the fading out to total oblivion in the very near future. All that will remain to the world of the fated race will be a few decaying monumemts, the minor relics preserved in museums, and something of what has been written. Today, before the wave of foreign invasion has fairly reached the remoter regions of America, the exotic peoples number nearly one hundred millions, the mixed bloods fifty millions, and the native remnant of strictly pure stock may be thought of as an almost negligible quantity. The Indian population of the United States in



IX. — Life history of the American race.

three hundred years has been reduced to less than one-third the original number, and among this remnant the pure bloods have to be sought in far-away districts. The end is thus not far to seek.

PROBLEMS OF RACE RELATIONSHIPS

It is customary to speak of the American aborigines as a single sub-species or variety, but there are really two well-marked divisions — the Eskimo of the northern shoreland and the Indian tribes occupying the expansive areas to the south. Occasionally we hear the former spoken of as the possible original occupants of a large part of the northern continent, and traces of their presence are supposed to have been found far to the south, but nothing has been proved regarding such primary occupancy. Though scattered over extensive and more or less isolated districts, the Eskimo are a singularly homogeneous people physically, intellectually, and culturally, their language even showing only dialectic variations. This condition does not support the assumption that they formerly occupied extensive areas, where under widely varying environments they would be subject to strong differentiating influences, sure to tell on the language, institutions, and arts of a very primitive people. When we observe that the Eskimo are manifestly more closely allied with the boreal peoples of the Old World than are the Indian tribes, and take into account the fact that they occupy the northern margin of the continent including the ferry and the bridge to Asia, we conclude that they represent late intercontinental movements and that they may be comparatively recent arrivals in America. The Eskimo probably acquired in a measure their present distinctive characteristics, somatic and cultural, in some restricted American area, and possibly, when glacial researches shall have made clear the succession of events connected with the appearance and disappearance of the ice sheets, the whole problem may be susceptible of solution. The Eskimo may be the Alaskans of the Glacial period, or of a portion of that period, occupying the large areas in the northwest not invaded by the ice, in contact always with the tribes across Bering sea, but separated completely for thousands of years from the Indians (assuming the existence of the latter) on the southern side of the great glacial barrier. Under such conditions they would naturally have followed the ice as it receded to the east until Greenland was reached, but would have been checked in southward movements by the advancing front of the tribes of the south.

On the other hand the Indians, scattered over the two Americas, show comparatively wide divergence among themselves in secondary

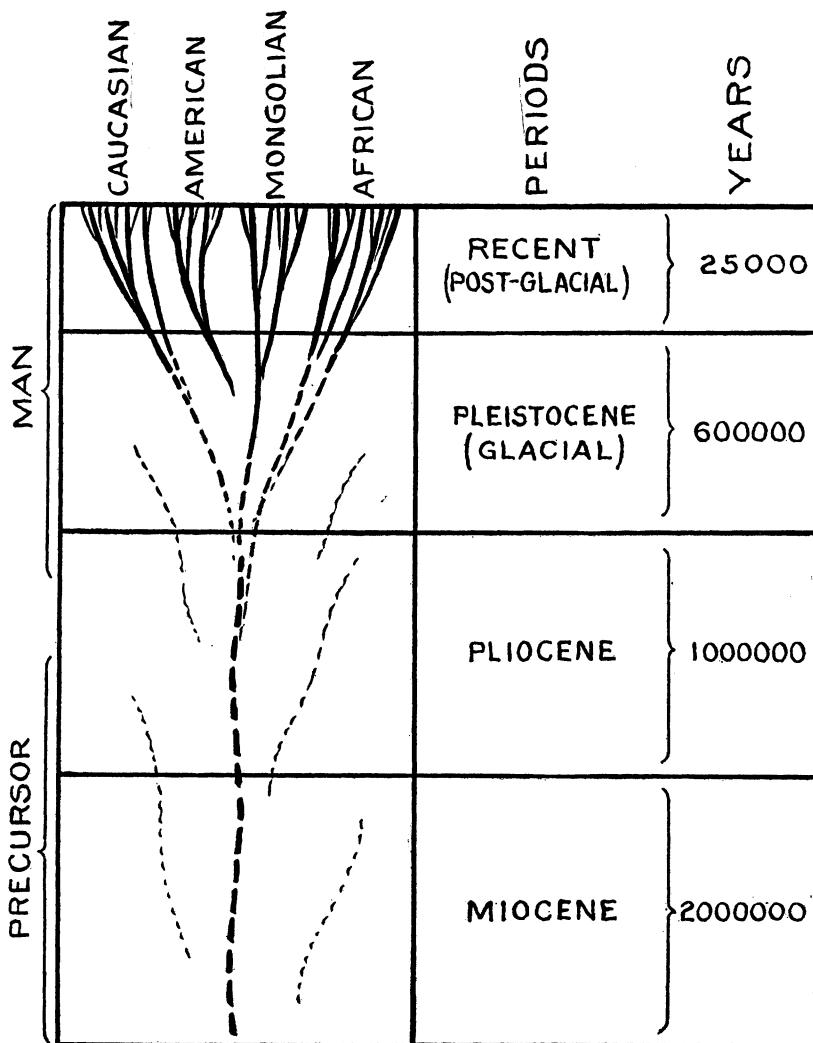
racial characters and especially in cultural achievements, a condition indicating a prolonged period of well-localized yet not wholly isolated occupancy. As a race they had become so highly specialized that many of the earlier observers failed to discover their true racial affinities and sought to derive them from various European, Asiatic, African, and Polynesian peoples. Recent researches in comparative ethnology, however, have set the matter right, and the connection of the Americans, in large part at least, with the peoples of Asia has been pretty satisfactorily established. In a large percentage of their characters the American aborigines distinctly approximate the Asiatic type of man. It is held by some well-known authorities that the Asiatic invasion of a round-headed people was preceded by the arrival of pioneers of the long-headed paleolithic race of Europe, by way of a North Atlantic land bridge supposed to have connected the two continents down to post-glacial times. But the best authorities today recognize no such bridge and it seems likely that the long-heads and the short-heads will have to be accounted for in some other way. This way has been provided by some theorists on the assumption of a paleo-American race of long-heads which has been located in South America. It is apparent, however, that the theories have been devised to account for the presence in America of the two types of crania. The explanation may better be sought perhaps in local tendencies to variation, paleo-Asiatic or American, rather than in the presence of other than Asiatic-American elements.

PROBLEMS OF TIME

The second group of problems comprises those of time or period. When did the family mature as man, and when did the expanding population spread from the region in which the *Hominidae* took shape, to occupy the various land areas of the globe? Beyond the limits of written history our only time scale is furnished by geology, and the correlation of our branching ancestral stem with the leaves of the great stone record furnishes a chronology which, although as yet imperfect and largely tentative, as investigation proceeds must assume definite and authoritative form.

The condition of the several subdivisions of man at the beginning of the historic period, a few thousand years ago, indicates that the

status of the then known groups — the African, the Mongolian, and the Caucasian — was much the same as now. The separation must



X. — Chronologic position of the human tree.

have taken place, therefore, ages before, and there is good reason for supposing that two or more of the sub-species were occupying their

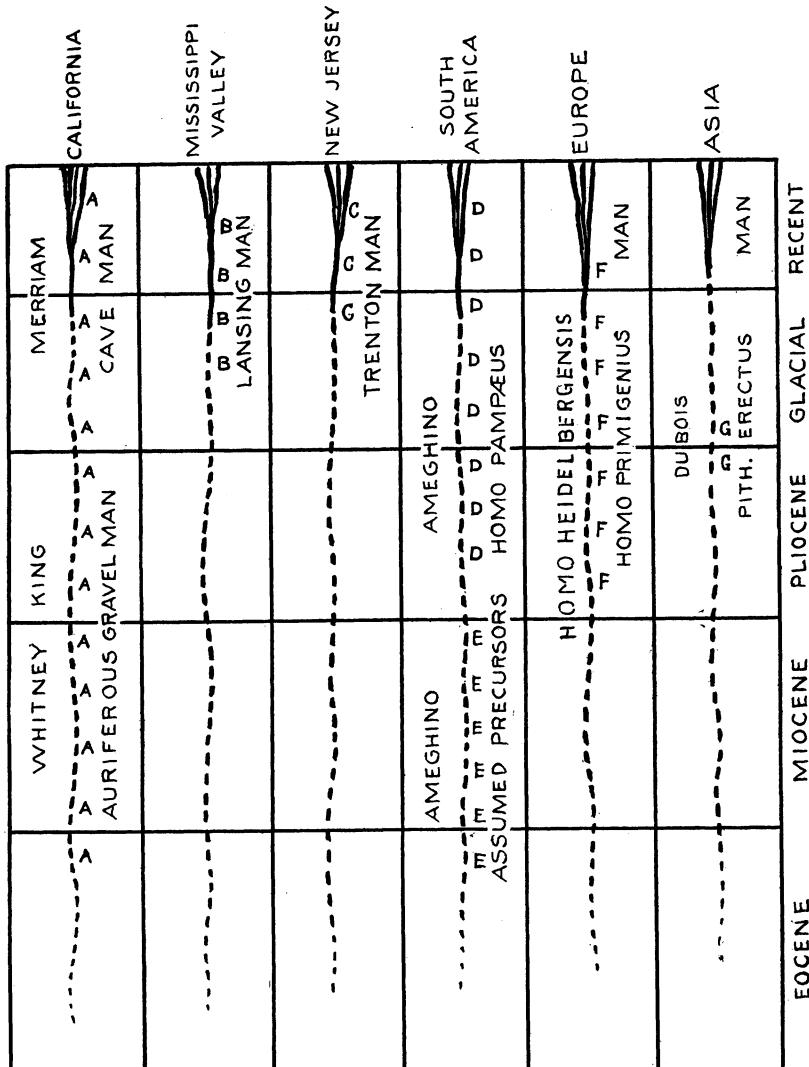
separate land areas during part or possibly all of the prolonged period which we speak of as Pleistocene or Glacial. We may even venture to believe that man, or highly developed forms of his antecedents, existed on some great land area of the globe at the close of the Tertiary period, and it is regarded as not improbable that the separation and somewhat wide dissemination began with the extensive changes in geography and climate initiated at or near that time, the better part of a million years ago.

The general chronologic position of the human tree thus suggested is indicated in Diagram X, the time of the separation of the four branches being imperfectly defined. It is inferred that some idea of the order of separation may be gained by a comparative study of the physical and mental characters and cultural achievements of the sub-species and their relative positions on the land areas. It is not probable, however, that all were differentiated at once or during the same epoch. The African and the Asiatic may be the result of the first branching, taking permanent form in well-separated environments, the Caucasian and especially the American developing later.

The features of the chronological diagram may be briefly enumerated. The geological periods, beginning above, are: (1) the Recent or post-Glacial, estimated to cover a period of 25,000 years; (2) the post-Pliocene or Glacial, placed at 600,000 years; (3) the Pliocene, at 1,000,000 years. These figures represent an approximate mean of the estimates made by our best chronologists, and can be relied on at least as suggestive of the relative lengths and orders of magnitude of the periods. The general relation of man and his precursor in time is indicated by brackets at the left.

It is surmised by some that the American race, as known to us, may be the product of post-glacial time (American), that is to say, the period, long or short, which has elapsed since the last retreat of the ice to the northeast and the final opening of the thoroughfares between Alaska and the transglacial areas to the south—a period variously estimated at from eight thousand to sixty thousand years. But it is a question whether this period was long enough to have permitted the ripening of conditions, physical and cultural, characterizing the native peoples. That the first installments of the race may have made their way to the south during one or more of the inter-

glacial periods or even in preglacial times is, however, regarded by others as quite within the range of possibility. But the proofs



XI. — Comparative view of the reputed finds of fossil man.

brought forward to establish this early occupation of the continent can hardly be regarded as conclusive in the absence of traces of the

actual presence of man or his antecedents in formations of inter- or preglacial age.

A comparative view of the various geological observations bearing on man's early occupancy of the continents is instructive with respect to the quality as well as to the quantity of the evidence. In Diagram XI a number of the geological observations indicating or assumed to indicate the early presence of man and of possible progenitors on the different continents are arranged approximately in the chronological order assigned to them by the various authorities. The race stems of the several geographical areas, rightfully connected in a common trunk, are here separately prolonged for convenience of presentation. *A, A* indicates approximately the range of positions assigned to the human remains and relics obtained from the caves and auriferous gravel deposits of California; *B, B*, the range of positions assigned to finds in the Mississippi valley, including the Lansing man, the Nebraska man, and the Little Falls man; *C, C*, the position of discoveries at Trenton, New Jersey, and other localities in the eastern United States. The approximate position of discoveries of human remains in the Pleistocene caves of Brazil and in the Pampean formations of Argentine and of more primitive forms in the Argentine Tertiaries, are shown in *D, D, E, E*.

Of the Old World observations we have, at *F, F*, the positions assigned to finds of human remains in western Europe, the earlier examples being *Homo Moustierensis* and the Chapelle-aux-Saints man, France; *Homo Heidelbergensis*, Germany; the Neanderthal man, Prussia; and the Spy man, Belgium. The only important find in Asia is *Pithecanthropus erectus* of Java, *G*.

It is true that the problems of antiquity and of distribution must be settled finally by geological evidence, but as indicated in the diagram the present status of that evidence is most unsatisfactory. Should we accept at its present face value the American evidence placed on record by Whitney, Ameghino, and others, we must reach at once the conclusion that America was inhibited by the human race a million years before the day of *Pithecanthropus erectus* and that the so-called New World was the cradle of the human race or at least of one or more races. These extraordinary results tend to awaken a suspicion that some of

the proofs of antiquity brought forward may be faulty, and this suspicion is further strengthened by our knowledge of the fact that most of the various observations utilized as evidence have been made by persons who were not qualified to deal critically with geological phenomena, or who, not realizing the importance of exact observation, failed to scrutinize properly the conditions under which the human relics were found. In North America much of the evidence which was formerly accepted as satisfactory, on closer investigation has lost its force, and is no longer implicitly relied on as proof of glacial or pre-glacial antiquity. Some of the South American evidence also has been challenged, and it is highly probable that critical examination may demonstrate like shortcomings in observations heretofore generally accepted. It is manifest, therefore, that the problem of fossil man awaits the light of further and prolonged research, and requires especially as a preparatory step the clearing away of a heavy burden of faulty observations and unwarranted conclusions. An earnest appeal for coöperation in dealing with the various phases of the subject is hereby made to those geologists and paleontologists whose researches bring them into close contact with the later Tertiary and post-Tertiary formations.

PROBLEMS OF ORIGIN

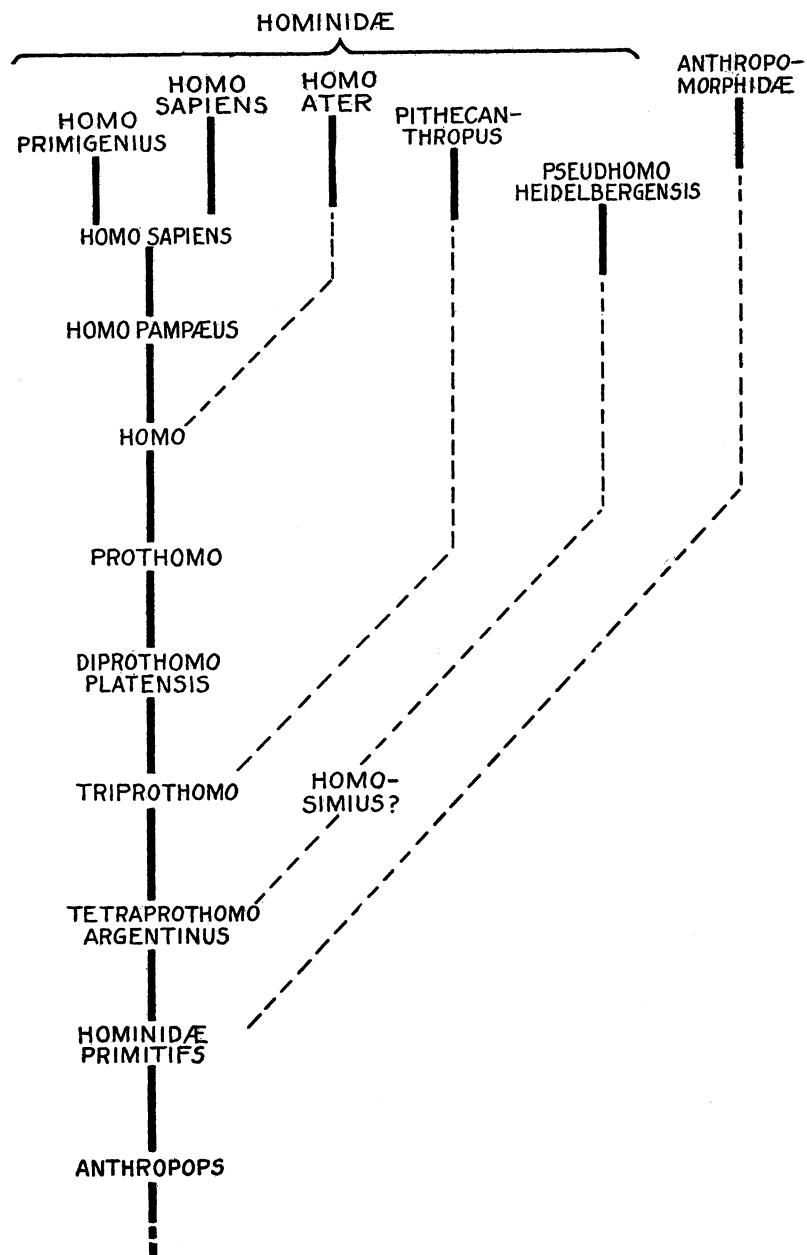
Somewhere in one of the great land areas of the globe lived and flourished the family of creatures to which the human precursor belonged. Somewhere our particular ancestral group worked its way upward out of the simple animal state, passing beyond other groups into the realm of erect posture, articulate speech, the manual arts, and it is reasonable to suppose that in the geological formations of that environment traces of the osseous remains of the man of this era are still preserved. It is the ambition of the student of anthropology to discover these remains, thus making substantial contributions to the initial chapters of human history.

It would appear that a number of land areas may reasonably lay claim to the distinction of being the birthplace of the race — Asia, Europe, Africa, America, and hypothetical lands auxiliary to both continents, now wholly or in part depressed beneath the sea. Numerous reasons may be urged, however, why this birth land

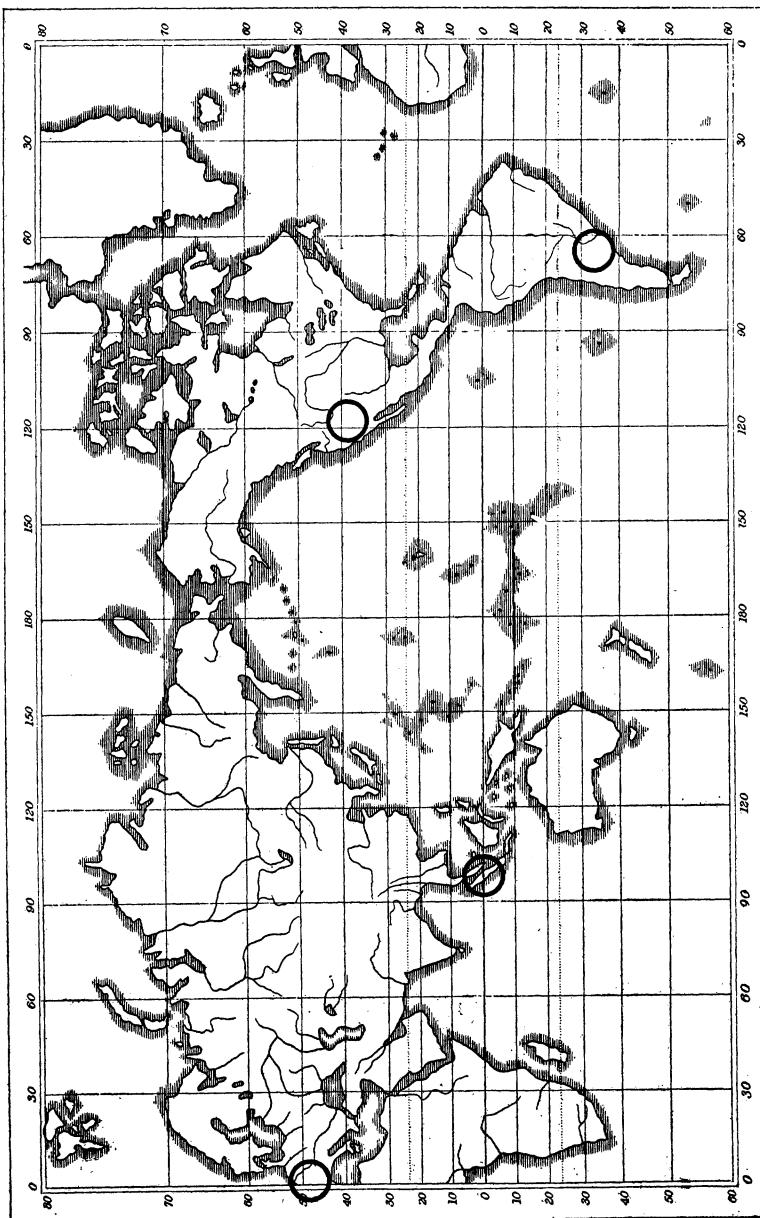
could not have been America. The eastern continent is far superior in area, in resources, and in diversity of living forms; it presents examples, living and fossil, of numerous near relatives of man; and today it contains the great body of humanity having vast diversity of racial characters and wide range of cultural conditions, all tending to indicate a prolonged period of occupancy. The western continent, on the other hand, is more limited in area; it contains or contained in the great body of its area but one race and that comparatively few in numbers and singularly uniform in physical characters and cultural conditions. It seems in the highest degree improbable that migration from America, at least of representatives of the present homogeneous race, could have resulted in peopling Europe, Asia, Africa, Australia, and Polynesia with races so diversified as the black, the yellow, and the white.

Advocates of the autochthonous origin of American man are just now claiming particular attention. Armed with the fragment of a fossil femur said to have come from the Miocene beds of the Argentine Republic, a stray vertebra, certain cinder-like relics, and other traces, also from middle Tertiary beds, Ameghino has constructed the remarkable scheme presented in Diagram XII. This diagram embodies and connects in a system not only the various human traces reported from the Argentine Republic and Brazil, but accounts for all human stocks in the New as well as in the Old World. The material employed in the development of this ambitious scheme is extremely meagre and will doubtless in a great measure fade away under the sharp fire of criticism that must ensue.

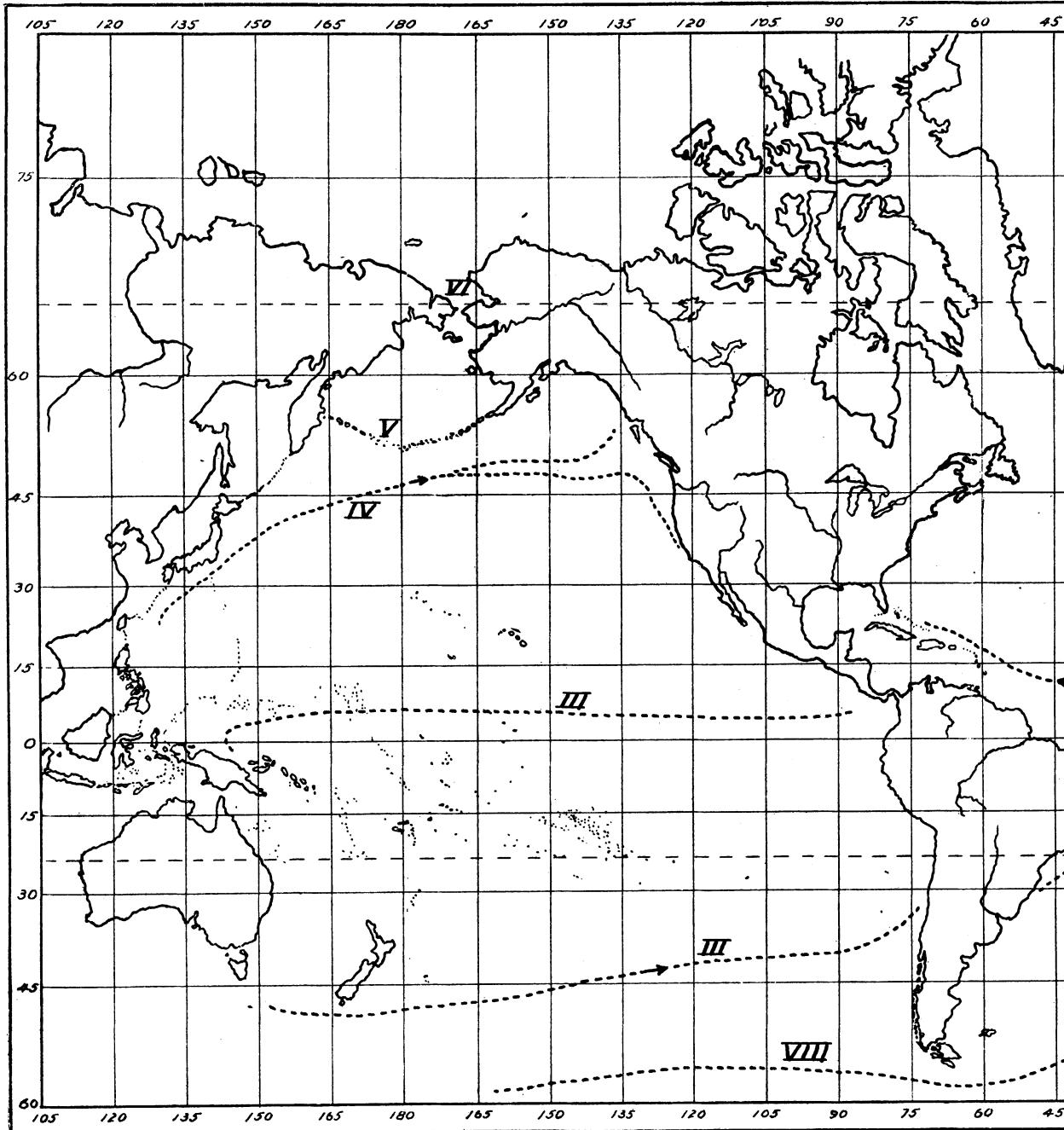
The attempt to locate the regions occupied by the human forebears at any particular geological period or stage of evolution is beset with great difficulties, the chief of which is the dearth of finds of well authenticated fossil remains, while many of the traces that have been found, such as *pithecanthropus* and *dryopithecus*, must be employed with the greatest care, since no one can say without additional connecting links whether or not they belong to the direct line of human descent. Considering the hints furnished by the various fossil finds, as tentatively shown in Diagram XI, four possible cradle regions are suggested, namely; Java, western Europe, California, and Argentine, as indicated in Diagram XIII.



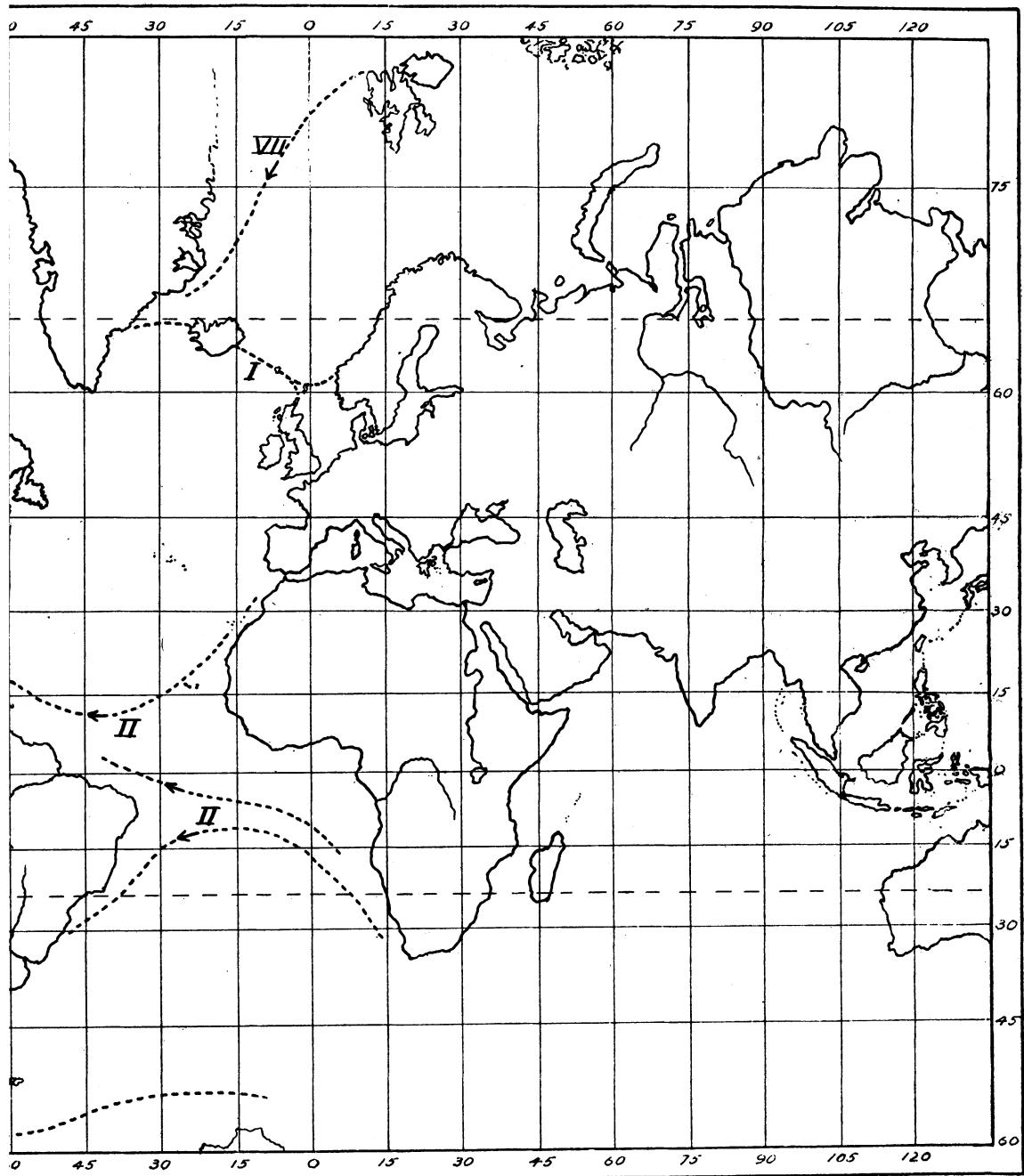
XII. — Ameghino's scheme of South American origins.



XIII. — Distribution of hypothetical cradles of the *Hominidae*.



XIV.—Bridges and ferries to the New World: I, North Atlantic bridge and ferry; II, Mid-Atlantic currents; III, Middle and South
VII, East Greenland Arctic current; VIII



and South Pacific currents; IV, North Pacific or Japan current; V, Aleutian bridge and ferry; VI, Berings bridge and ferry; rent; VII, Antarctic currents.

Assuming a common origin for the *Hominidæ* in some parts of the Old World and climates and grouping of the continents corresponding in the main to the present, the probabilities seem favorable to the view that dispersal to distant land areas did not take place until the populations had greatly multiplied and until considerable advance had been made in the arts of humanity. Under known geographical and climatic conditions, America naturally would have been the last of the great land areas to be reached.

PROBLEMS OF INTERCONTINENTAL COMMUNICATION

According to the testimony of both geology and biology the eastern and western continents for a long period have been connected more or less intimately by bridges and ferries. No one can say, however, just what obstacles may have stood in the way of migrating peoples at any very early period and when and how the various obstacles were met and overcome. We cannot even say with certainty whether the first intercontinental migration was made by the practically cultureless pioneers of the *Hominidæ*, by wandering hordes of the early Stone Age, or by tribes employing the dugout or the skin boat. These problems are the subject of earnest research, and a consideration of first importance is that of the character of the bridges and ferries, the possible routes by means of which the American continent could have been reached (Diagram XIV). As they appear today these approaches are first, the north Atlantic chain of islands connecting northern Europe with Labrador; second, the mid-Atlantic currents setting steadily westward from the African coast to South America and the West Indies; third, the middle and southern Pacific currents traversing the vast expanses separating the Polynesian islands from South America; fourth, the Japan currents setting to the northeast from Asia and washing the shores of North America; fifth, the Aleutian-Commander chain of islands connecting Kamchatka with Alaska; sixth, the well-known route by Bering strait; and, seventh, possible connections during remote periods across the Polar regions north and south. Geological changes within the human period may have obliterated other thoroughfares, and all of those enumerated above may have undergone changes increasing or diminishing their availability as routes of

migration. As they stand, the majority are not available for primitive voyagers, and could have been traversed only by wayfarers drifting with the winds or currents to transoceanic shores. Such voyages are not likely to have occurred except in comparatively recent times, and can hardly have resulted in colonization or in seriously affecting blood or culture in regions already occupied. The story of Fusang, the land accidentally reached by early Chinese voyagers, is not of consequence in this connection, since the time is recent, and since it is not at all probable that the land visited and reported by the wandering priests was America. If, as is generally believed, Fusang was Japan, the backward state of eastern Asiatic navigation in recent centuries is thus clearly indicated.

It is well known that Japanese junks have been found floating in the near Pacific or stranded on the American shores, but this also has little bearing on the question of the peopling of America, since this continent was certainly inhabited before the Japanese junk became a sea-going vessel.

It has been a favorite theory with a few writers that the north Atlantic was wholly or partially bridged by land connections in the remote past, that the Faroe islands, Iceland, and Greenland were so intimately connected that northern Europe has furnished at least a part of the American population; but modern researches seem to discredit this theory, and James Geikie, in a recent work, does not hesitate to declare¹ that "not a single scrap of evidence" can be adduced in support of the once generally accepted idea of a pre-glacial or early glacial elevation of the northern Atlantic sea bed. The elevation of this region was probably assumed by glacialists as the best means of explaining the glacial period. This route may be omitted, therefore, from consideration as a probable thoroughfare for European migration to America. Highly developed water craft carrying fresh water and a food supply would be required to traverse the three formidable stretches of open sea between the Faroe islands and Labrador. There are no currents setting in the proper direction to aid in this voyage, and storm driven mariners are not to be counted on as colonists.

The chance of voyagers having reached America intentionally

¹Geikie, J., *Fragments of Earth Lore*, p. 283.

with the aid of the trade winds or the mid-Atlantic currents, prior to the time of Columbus, is perhaps too slight to call for serious consideration. The shortest possible voyage between Africa and South America is upwards of 1,000 miles in length. The fabled Atlantis has been regarded as a possible route of communication between the two continents but geologists say that, if an Atlantis ever existed, it certainly disappeared before the beginning of the human period.

In the southern and middle Pacific there are thousands of miles of open sea separating South America from the nearest Pacific islands, a condition precluding the idea that very primitive peoples could have found a thoroughfare here, and geologists have discovered no evidence tending to show that these enormous gaps were ever bridged. The same may be said of the route of the north Pacific current, which originates in the Japan sea and sweeps the shores of North America from the Aleutian islands to the Gulf of California. Traversing these vast wastes of ocean was hardly possible, even by drifting voyagers, until within comparatively recent times.

We now approach the route afforded by the festoon of islands draped like a wreath, in the Pacific between Kamchatka and Alaska. Today, with the boats of the primitive natives of both coasts, this is a possible route, but the voyage has one great interval of 300 miles of open and generally tempestuous sea. It was not, therefore, a probable route for very primitive times. Examinations of the ancient midden heaps and other inhabited sites of the Aleutian islands give no encouragement to the idea that this was ever a thoroughfare for migrating populations. Doctor Dall's careful explorations¹ indicate that three periods of Aleutian occupancy may be distinguished, estimated to embrace in all some 3,000 years or more. The earliest period is represented by the echinus eaters, a people of the lowest culture, apparently without fire, and, so far as the evidence goes, without implements or utensils of any kind, and necessarily without boats or any other possible means of sailing the seas. The second occupants were fish-eating tribes, who may have had craft of the simplest kind, but certainly none fitted for long voyages.

¹ Dall, W. H., On succession in the shell heaps of the Aleutian Islands, *Contributions to North American Ethnology*, Vol. I, p. 41.

The people of the third period were more advanced, approximating to the historic tribes in culture. The first and second occupants were necessarily of continental American origin and the same statement is no doubt equally true of the third. In all the deposits not a trace was found indicating that stranger wayfarers of higher culture, or of any culture, had ever passed that way. If this chain of islands had been a thoroughfare for migrating tribes this could hardly be true. Stations would have been made on all the larger islands and some indications of their presence would remain to the present day. The Commander islands, forming the western links of the chain, were not inhabited when first visited by civilized man, and no traces thereon of occupancy of any kind have been as yet reported. Thus there is an interval of more than 300 miles on this supposed route in which no evidence has been found of human presence, while an expanse of a thousand miles or more shows no trace of migrating peoples. None of the native peoples of the whole north Pacific coast from Japan to California, when first known to the whites, would have ventured to navigate the broad expanse of open sea that separates the outer members of the Aleutian group from Kamchatka without stronger motives for so doing than can now be imagined, and there is no evidence that at any earlier time the people of this coast were more enterprising or skillful in boatmaking and navigation, or that stronger motives for attempting the voyage existed than during the historic period. Trade by such peoples over such a route is not to be thought of. Neither is there evidence of the bridging of Bering sea by glacial or other ice masses so as to make migration feasible, and it seems highly improbable that it ever was a thoroughfare for any people. It seems safe to conclude that the so-called Aleutian-Commander island route is not and never has been an intercontinental route of travel.

Among the possible gateways to America, interest centers chiefly around that of Bering strait; it is apparently possible, without change in present intercontinental relations, for Asiatic peoples of primitive culture to have reached and peopled America. The distance from land to land is only forty miles and during especially frigid seasons ice forms a bridge so complete that crossing becomes a question only of the presence of migrating peoples and of warmth and food supply

for the journey. Here then, supposing no important modification of conditions, there has ever been an open thoroughfare from Asia to America for peoples of a culture sufficiently matured to enable them to withstand the rigors of Arctic climates.

PROBLEMS OF MIGRATION

In this discussion we pass over entirely consideration of the fact that inhabitants of the far northwest have moved to some extent across Bering strait into Asia. Occupation of the habitable areas of both continents is so ancient that migratory tendencies must have long since reached a state of practical equilibrium, and recent movements of population back and forth could have no possible relation with the movements of the period of primary occupancy. Although the early settlement of America is readily conceded, the period is not even approximately determined. The theory that the precursor of man occupied the entire world in pre-glacial or early glacial times is not to be accepted on the limited evidence furnished. The main points of this so called evidence are as follows : (1) that traces of possible precursors have been recovered from pre-glacial formations in widely separated regions ; (2) that primitive forms of the *Hominidæ* have been recovered from early Quaternary formations in western Europe and in South America ; (3) that in late Tertiary time the relation of land areas was more favorable to general distribution of the higher mammals than in the present period ; (4) that climatic conditions prevailing in Tertiary and earlier Tertiary times conspired with favorable geographical connections to make continental communication easier than it is today ; (5) that the physical and cultural characteristics of the American tribes are so highly specialized as to warrant the assumption of great antiquity. These considerations are worthy of close attention, but in the absence of well authenticated traces of man in the geological formations of the periods referred to they must be relegated in the main to the realm of speculation.

At first glance the theory of very early and general distribution of the *Hominidæ* may not impress the mind as being unreasonable, yet it should be asked why this group of creatures more than the apes and monkeys should take to wandering into distant and inhospitable regions ? When we consider that quadrupeds generally have a

widely distributed and reliable food supply, that nature furnishes them with ample protection from the cold, and that they multiply rapidly, while the precursor of man in all probability was unfitted to withstand the cold of Arctic climates or even of temperate winters, subsisted on tropical fruits rather than on animal food, replenished his numbers slowly, and was not endowed with the fleetness of foot that makes seasonal migrations possible, there seems to be sufficient for reason holding that distribution to the remote, and especially to the temperate and frigid areas, was much slower than would be the distribution of most mammals. The tropical and sub-tropical man of early times would not willingly migrate to inhospitable lands and forbidding environments any more than would the apes today. He had not only to become measurably acclimated but had to acquire sufficient intelligence to enable him to master the adverse conditions of the colder climates and it seems that only highly developed, reasoning, fire-using, implement-making, and warmly-clothed man would be equal to the task. It is reasonable therefore to hold that the *Hominidae* probably did not begin to spread widely beyond their original habitat until the human status had been fully reached and neither far nor rapidly until a considerable degree of culture had been achieved.

Under known conditions of land relations and climate it appears that America could hardly have been colonized by a people not well skilled as hunters and fishers, not acquainted with fire, and not supplied with suitable clothing. Today, deprived of fire and clothing, the human race could not survive a year north of 30 or 35 degrees of north latitude, and it seems that more primitive tropical forms would have little greater chance of survival.

The migrations of the precursor were, no doubt, directed, as were those of the related mammalian groups, along lines of least resistance, as determined by immediate considerations of multiplication of numbers, food supply, safety from foes, climatic change, and instincts acquired from long periods of experience. The movements of primitive man were doubtless of kindred nature, while civilized man is governed more fully by well defined ultimate considerations of welfare.

The movements of the pioneers of the race were not those of

simple migration from a native seat. Each step was the result of pressure of some form which by degrees pushed groups out of the original habitat, thence from environment to environment, each step requiring painful processes of exploitation and adaptation and each being liable to retrogression, defeat, and even complete group annihilations. We may fairly assume, however, that the perpetual struggle for existence necessarily engaged in by migrating peoples dealing with new and strenuous conditions developed the hardihood and the higher attributes of mind that in time came to characterize the race, making possible the conquest of the remoter parts of the world.

Considering the conditions under which dissemination must have taken place, it seems improbable that man occupied all lands while still within the very primitive stages of progress and we are bound to insist at least that early or even late peopling of any land should not be assumed but should be established by evidence that can withstand the severest criticism. When we recall the difficulty with which the civilized nations of Europe, possessed of sea-going craft, reached far lands, it should not surprise us if primitive man, without boats, or with craft of the simplest kind only, left some of the remoter regions of the world, as, for example, America, for a long time undiscovered.

The ten thousand miles separating tropical Asia and tropical America could be traversed by men afoot in a few years of continuous progress, but for reasons already given we must not think of the movement that led to the peopling of America from tropical regions, possibly of the Old World, in the light of an ordinary journey. Previous to the period of commercial activity among nations the home of each people was the center of the world to that people and in the absence of a strong motive long journeys would not be undertaken.

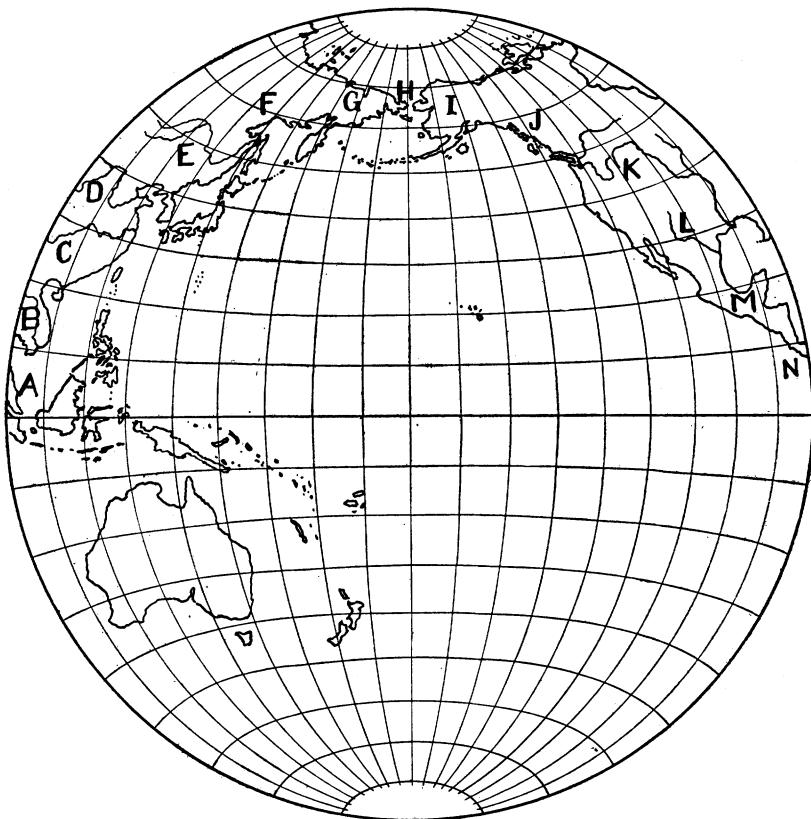
The precursor of man at the period of his specialization as man probably occupied a limited area — possibly a single homogeneous environment — and the variations of race took place as a result of dispersal and consequent group isolation. We may fairly assume that the precursor, during the stage of development represented by *Pithecanthropus erectus*, occupied some area in southern or south-

eastern Asia not larger perhaps than that occupied by the gibbon or the orang today. Can we imagine agencies sufficiently potent to have sent such a creature in haste northward a thousand miles, from tropical Java, for example, to the sub-tropical Irrawaddy, thence, later, five hundred miles into the temperate Yellow river region, thence a thousand miles or more into the Amur valley, and thence again two thousand miles over the icy plateaus and ranges into Siberia, across the chill and barren tundra to the Anadyr, and finally to arctic Cape East? A tendency to wander may be assumed, but pressure of multiplying numbers would seem to be the only adequate agency in driving peoples from a land of warmth and plenty to the inhospitable regions of the North. At best a vast amount of time necessarily would be consumed with each of these great steps. In fact, the changes would be so profound in respect to climate and food supply that the wonder is that a tropical creature ever succeeded in accomplishing the feat.

I should prefer to assume that the movements were made very gradually, that in temperate climates the elements of culture were acquired through repeated struggles with unfriendly conditions, and that vast increase in population took place before the farther north was penetrated. We cannot conceive of men crossing the cold plateaus of Mongolia and Manchuria and entering Siberia without an artificial food supply, without fire, without clothing, and without implements of the chase, for it is here that he would encounter those frigid waves which for ages have swept southward from the Arctic circle.

The difficulties of migration would not end with the crossing of Bering strait. Tribes acclimated in Siberia would soon make a home in the valley of the Yukon, but beyond this, during the long glacial period, a vast ice sheet extended with occasional interruptions from the far north across the continent to the southwest, and ages must have elapsed before the pioneers of Asia's expanding population crossed this zone, reaching the valley of the Columbia. The spread from the Columbia to the east and south over middle America would be easier, but yet would not be accomplished in a day.

Diagram XV will aid in conveying a notion of the problems of migration under known conditions from an Old World cradle to the



XV. — Stages of migration in the peopling of America from tropical Asia.

New World by way of the arctic gateway, and in suggesting the cultural transformations that must have accompanied each step of the progress. In each successive environment from *A* to *G* man would come under the sway of new conditions, and at *G* there would probably not remain a single activity or a single article of food known at *A*. Supposing for example a stone age culture, language, social institutions, government, religion, and the arts and industries, would be subject to frequent and decided modifications and not a few, possibly nearly all, would suffer absolute extinction. Agriculture, pastoral life, modes of transportation, metallurgy, ceramics, building, textiles and the æsthetic arts one by one would drop into disuse,

passing little by little out of the knowledge of the northward migrating people, for there would be not only elimination of activities, but there would ensue quick forgettings. In one environment the preceding habitat in a few generations would be entirely forgotten, and the knowledge of an art lost for a generation is lost for good, for even the echoes of tradition in a few generations entirely disappear. The frigid zone knows not of the temperate and the temperate knows little of the tropical until after transportation is placed on an artificial basis.

In the present state of our knowledge of the history of man in America we cannot assume to dispose finally of the multitude of problems involved. It is most important, however, that the whole subject should be passed under review at frequent intervals, the data assembled and classified, the theories analyzed, and, if necessary, new hypotheses formulated. The anthropologist, however, cannot assume responsibility for the whole vast range of research involved; he must await the slow progress of biologic, geologic, and geographic science. The naturalist, the geologist, the geographer, the climatologist, the astronomer, the paleontologist, the somatologist, the psychologist, the anatomist, and the pathologist must come to the aid of the ethnologist and the archeologist before the history of the American race can be written.

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